

540,207

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
31 July 2003 (31.07.2003)

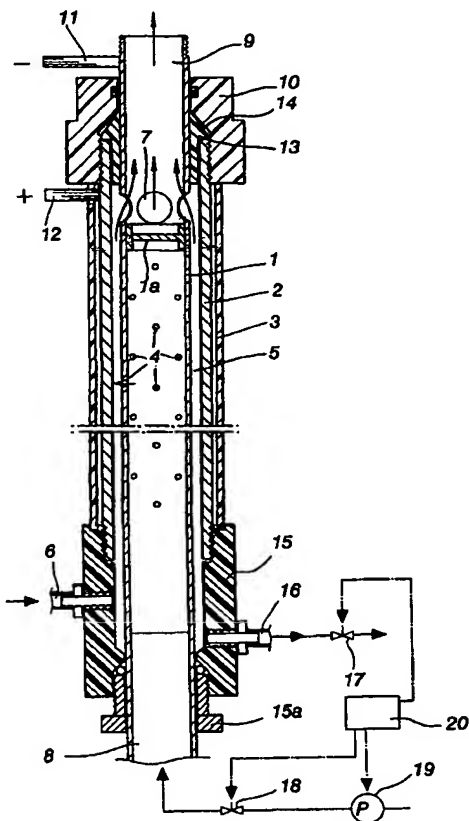
PCT

(10) International Publication Number
WO 03/062152 A1

- (51) International Patent Classification⁷: C02F 1/465, 1/463 (74) Agent: LEITZINGER OY; Tammasaarenkatu 1, FIN-00180 Helsinki (FI).
- (21) International Application Number: PCT/FI03/00059 (81) Designated States (*national*): AE, AG, AL, AM, AT (utility model), AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ (utility model), CZ, DE (utility model), DE, DK (utility model), DK, DM, DZ, EC, EE (utility model), EE, ES, FI (utility model), FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (utility model), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (22) International Filing Date: 24 January 2003 (24.01.2003)
- (25) Filing Language: Finnish
- (26) Publication Language: English
- (30) Priority Data:
20020139 25 January 2002 (25.01.2002) FI
20025064 18 December 2002 (18.12.2002) FI
- (71) Applicant (*for all designated States except US*): BCDE GROUP WASTE MANAGEMENT LTD OY [FI/FI]; Konalantie 6-8 A, FIN-00370 Helsinki (FI).
- (72) Inventor; and
(75) Inventor/Applicant (*for US only*): SUOMINEN, Hannu, L. [FI/FI]; Konalantie 6-8 A, FIN-00370 Helsinki (FI).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR REMOVING IMPURITIES FROM WASTE WATER BY ELECTROFLOTATION



(57) Abstract: The invention relates to a method and apparatus for removing impurities from waste water by electroflotation. The waste water to be cleaned is conducted through an electrolytic cell. Electrolysis is performed between two electrodes (1, 2) of different electronegativities, such that the more electronegative electrode (1), which is non-wearing in a cleaning process, is used for producing hydrogen gas and hydroxyl ions from water. The less electronegative electrode (2), which is an active, wearing electrode in a cleaning process, is used for producing metal ions in a solution to be cleaned. In addition to this basic reaction, a desired oxidation-reduction reaction is initiated in the cell in a strictly controlled electric field for removing one or more designated impurities from cleaned water.

WO 03/062152 A1



Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.